CLAIMS

1. An electromagnetic switch element that through electromechanical activation is able to be used to control the propagation of an electromagnetic signal within a guiding medium.

2. An electromagnetic switch element according to claim 1 in which the guiding medium is a planar guiding medium.

3. An electromagnetic switch element according to claim 1 or claim 2 in which the guiding medium is a waveguide.

4. An electromagnetic switch element according to claim 1 or claim 2 in which the guiding medium is made of a semi-conductor material.

5. An electromagnetic switch element that is activated by displacement of elements of the desired conductivity, the displacement being forced through electrostatic, electric field, magnetic field, thermal or other means.

6. An electromagnetic switch element according to claim 5 in which the elements are in the form of polymers, powders or liquid suspensions.

7. An electromagnetic switch element according to any one of claims 1 – 6 and comprising:

(a) microwave guidance means;

(b) at least one conductive element that is able to be selectively introduced into the guidance means such as to affect the propagation of the electromagnetic energy within the guidance means; and

(c) at least one element of controllable reflectivity that may be used to affect the spatial distribution of the electromagnetic energy by absorption of energy.

8. An electromagnetic switch element according to claim 7 in which the microwave guidance means are parallel conductive plates.

9. An electromagnetic switch element, substantially as herein described with reference to the accompanying drawings.

10. A distributed array of the electromagnetic switch elements according to any one of the preceding claims.

11. A distributed array according to claim 10 whereby the electromagnetic switch elements are able to be controlled through associated logic devices.

12. A miniaturised active electromagnetic antenna including at least one electromagnetic switch element according to any one of claims 1 – 9, or at least one distributed array according to claim 10 or claim 11.

13. An active electromagnetic delay line including at least one electromagnetic switch element according to any one of claims 1 – 9 or at least one distributed array according to claim 10 or claim 11.

CLAIMS

1. An electromagnetic switch comprising a guiding medium and switch means for controlling propagation within the guiding medium, characterised in that the guiding medium comprises a substantially parallel plate structure, and the switch means comprises an array of electromechanical switch elements positioned to allow selective reflection and absorption of an electromagnetic signal in controlled directions.

2. An electromagnetic switch according to claim 1 in which the guiding medium is a planar guiding medium.

3. An electromagnetic switch according to claim 1 or claim 2 in which the guiding medium is a waveguide.

4. An electromagnetic switch according to claim 1 or claim 2 in which the guiding medium is made of a semi-conductor material.

5. An electromagnetic switch according to any one of the preceding claims in which the electromechanical switch elements are activated by displacement of elements of desired conductivity, with the displacement being electrostatic displacement, electric field displacement, magnetic field displacement, or thermal displacement.

6. An electromagnetic switch according to any one of the preceding claims in which the elements are in the form of polymers, powders or liquid suspensions.

7. An electromagnetic switch according to any one of the preceding claims in which the parallel plate structure is a microwave parallel plate structure; and including at least one element of controllable reflectivity that may be used to affect the spatial distribution of the electromagnetic energy by absorption of energy.

8. An electromagnetic switch according to any one of the preceding claims in which the electromechanical switch elements are controllable through associated logic devices.

9. A miniaturised active electromagnetic antenna including at least one electromagnetic switch according to any one of the preceding claims.

10. An active electromagnetic delay line including at least one electromagnetic switch according to any one of claims 1 – 8.